

Moses Brown School Technology Plan 2004



FOR THE HONOR OF TRUTH

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EXECUTIVE SUMMARY

Technology is becoming a ubiquitous presence in the daily lives in our students, faculty, and staff. The goal of this plan is introduce the beginning of this omnipresence at the Moses Brown School. It contains the planning requirements necessary for a comprehensive and long-range plan for the development and integration of technology. The plan directly addresses technology's vital results in the competency areas of research, understanding of informational sources, the communication of data, and the selection of appropriate technologies to solve problems and communicate with an audience. Schools need to select appropriate curricula, establish effective learning environments, and form supportive partnerships within the community to achieve the goal.

The vision of the curriculum is to integrate technology-specific instruction into a regular class section. This will allow students to learn the appropriate and relative computer skills, but it will also deliver the necessary instruction to the faculty member as well. In addition to educating our students, it is expected that our faculty will be able to gain sufficient computer skills to allow them to integrate more technology into their curriculum without the assistance of a technology educator. Over time this will allow the technology curriculum to move to more advanced topics as the basic skills will be taught by regular faculty.

Digital portfolios represent the next major section of this plan. They will be used to record evidence of student achievement, or for performance review by teachers, or to provide a record of a research project, etc. The possibilities of the digital portfolio as a means of enhancing the purposeful use of technology and sharing the outcomes of learning with the community cannot be understated. Making the successful completion of a digital portfolio for Upper School students a graduation requirement ensures that our students have mastered at least a minimum skill level of technology that will prepare them for college and the world beyond.

Improving procedures, communication, and knowledge sharing are also an important part of the plan. Technology has the possibility of increasing the productivity of employees and students as well as their depth of understanding. While this will be an ongoing process, this plan details steps that we are going to begin over the next three years. Listed within are suggestions for moving towards a paperless school, improving the school's web sites, enhancing collaboration, streamlining the comment system, and creating a unified calendaring and resource scheduling solution.

The campus network, possibly the most vital system on campus, is also addressed. First, in order to meet the demands of the current technology use and the future developments, constant attention and funding must be given. Upgrading older equipment will solve problems that may prevent users from properly accessing the resources that are needed. Newer installation should be made with future growth in mind. Secondly, the plan addresses the needs of the current wireless networks in the Lower and Middle School's and details the schedule for the introduction into the Upper School.

Among the other items mentioned in this plan include the change of the platforms in the Middle School from Macs to PCs, remote access for users, and backup and disaster recovery plans. Additionally, plans for staff and faculty training, which will be required to carry out these ideas, are listed. This will also be an ongoing process to determine the best method to deliver instruction. There are many other recommendations contained within the plan. We encourage each one to be considered carefully.

In conclusion, the Moses Brown School Technology Plan 2004 is a comprehensive recommendation on how to move the community ahead to face the challenges and dynamics of an accelerating technology-driven world.

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Introduction

The School and Its Mission

The Moses Brown Mission Statement

As it enters its third century, Moses Brown School exists to inspire students to reach their fullest intellectual and spiritual potential.

We engage students in a rich academic curriculum, a broad offering of arts and athletics, and a daily life strongly rooted in the Quaker values of cooperation and community service.

We affirm the Quaker belief that there is a divine presence in each person which influences our decision making, leads us to the truths we seek, and commands our highest respect.

We consider the virtues of simplicity, integrity, group wisdom, and respect for differences paramount to helping students of all faiths and backgrounds discover their mission in the world.

Adopted by the Board of Overseers, January, 1993

The Technology Department and members of its affiliated committees undertake activities to support the school's mission, especially critical in today's society where gathering, using, and transmitting information are considered necessary skills. Employment opportunities, and often colleges, increasingly require developed technological skills as a prerequisite. Moses Brown School strives to equip its students, faculty, staff, and administrators with the technological tools and knowledge they need to function in society.

This Moses Brown School Technology Plan focuses on the initiatives that must be implemented and maintained in order to achieve the School's educational goals as stated in the school's mission. This Technology Plan addresses the needs of the educational community's diverse backgrounds and experiences with technology. Implemented, the Plan assures that Moses Brown School graduates will be adequately prepared to become functioning members of a global, technological society. In the process, Moses Brown School's commitment to lifelong learning is primary.

Technology Plan 2004 offers a vision for the future of technology on the Moses Brown School campus. The document includes overall technological and educational goals as well as implementation steps. This design takes into consideration future school needs and technological innovations, and it recognizes both financial and personnel requirements. Its acceptance and implementation help ensure that technology at Moses Brown School will continue to be integral part of the educational mission of the school.

School Community History and Demographics

Moses Brown School is a Friends' (Quaker) Independent School located on the East Side of Providence, RI, an urban community. The school was founded in 1784 as The New England Boarding School in Portsmouth, RI to provide a education for children who were members of the New England Yearly Meeting. Today, the school called "Moses Brown School" since 1904, after its original founder, couples academic excellence with a profound concern for the value of each individual.

Currently, Moses Brown School has an enrollment of approximately 775 students. The Lower School serves 215 students in grades nursery through five; the Middle School serves 184-188 students in grades six through eight; the Upper School serves 390 students in grades nine through twelve. Moses Brown employs approximately 200 administrators, faculty, and staff members.

Overview of the Technology Planning Process

In 199X, the Moses Brown Technology Committee, consisting of representatives from faculty, staff, students, parents, and administrators, completed Moses Brown's first Technology Plan. In February 200X, a new committee of similar make-up began meeting to assess the progress made under the current technology plan and to recommend changes in order to create an "extended" timeline for the plan. The committee was able to confirm that all of the goals in the 199x plan were met or exceeded. The research and investigation needed to write the new plan were completed in 200X under auspices of that large committee. Finally, the committee of the whole met and adopted, in substance, the new technology plan to be implemented for the years 200X-200X¹. Following a change in the department's personnel, a smaller committee formed (200X-0X) to finish the document.

Technology Statement: Themes and Vision

Using the tools of technology, the **central themes** of the new plan are to

- Enhance the learning environment.
- Improve instruction.
- Facilitate management at all levels.
- Improve academic community networking.

The **vision**, one of life-long learning and continuous skills acquisition, is central to success in today's world. Through the use and enhancement of technology in education, school and community members will be able to communicate and cooperate in a global society. This will allow them to take advantage of the full range of future opportunities and challenges that technology affords. To this end, members of the Moses Brown educational community must:

- Recognize their responsibility for ensuring that resources are available for providing access to technology.
- Understand, support, and appreciate the role of technology in education.
- Be ready to respond to the changes and needs in society brought about by the technological revolution.

Technology Mission Statement

Technological advances impact our world, on our students' futures, and on effective teaching strategies. Moreover technological advances offer innovative instructional strategies. Therefore, we seek to encourage the effective integration of technology in all appropriate settings across our campus. Such promotion involves the maintenance of network infrastructure, access to current technologies, professional development and training, and the integration of technology to enhance the curriculum. Hence, we seek to create an appropriate environment which fosters the use of technological resources, encourages the entire community to keep current with technology, and prepares all to adapt readily to future innovations.

Moses Brown School seeks to provide quality educational programs and services that will prepare students to contribute successfully in an ever-changing, information-based global society. To this end, students must learn to use technology to access, analyze, create, manage, and communicate information effectively. ***Technology at Moses Brown School must be integrated seamlessly in the classroom as both a tool for teaching and a tool for learning. Furthermore, it is imperative that the Academic Technology Department not lead the community in every venture, but to advise and support the efforts of others.***

Tools of Technology

"Tools" of technology include hardware, software, multimedia devices, communication systems, the Internet, and local and wireless networks. Technology² offers the Moses Brown community access to voice, video, and data

¹ It should be noted that the original committees to draft this document met in 200X. The final version represented here is the revision of the previously un-adopted plan.

² It should be noted that the term, "Technology" does not refer to the ATD.

obtained through a variety of mediums. Technology is used as an instructional, administrative, and evaluation tool. It is integrated into the school through appropriate selection, effective program application, and continuous professional and educational development. Individual and/or group training sessions are essential to the schools' success at using academic technology. ***Of equal importance are the necessary personnel and support for installation, maintenance, and repair services.*** The following beliefs should guide the selection and integration of technology at Moses Brown School:

- Students, teachers, staff, and administrators must be given the access, time, and training to become comfortable using technology.
- Curricular goals and objectives must contribute to and connect with the primary mission of student learning.
- Technology should enhance the educators' ability to provide for the individual needs and learning styles of each student.
- The school must facilitate cooperative learning experiences and the development of the use of critical thinking skills in real and relevant situations.
- Instructional leaders and teachers must be empowered to rethink and restructure how they plan for and implement instruction.
- Technology should facilitate communication among teachers, administrators, parents and students while ensuring security and confidentiality.

A History of Technology at Moses Brown School

Computers were introduced at Moses Brown School, as they were at most other independent schools, as an "unknown." The school's first foray into this new technology was in the **mid-seventies** with the installation of a terminal connected by telephone line to a time-sharing account on Dartmouth College's mainframe computer. Then, the school purchased a single Digital minicomputer supporting several terminals. Students wrote their own programs in the BASIC computer language.

In the early **eighties**, the school purchased and installed eight Apple IIe desktop computers, a double disk drive, and a printer in the new all-school Orenstein Computer Lab. One Apple was set up in a locked, library storage area and was available only to faculty to learn this new technology. Administrative needs were met by a programmed mainframe computer with three terminals. Demands for use brought on the opening of two new labs, the Upper School Lubrano (IBM) and Apple IIe Lab. Commodore computers were added to the Orenstein Lab, which signaled the beginning of two platforms, Apple and PC, support at Moses Brown. All programs and data were stored on 5.25" floppy disks. The Lower School began using Apple Computers. "Computer Literacy" workshops and workday private lessons were offered to faculty and staff to enable them to make best use of the Apples and PCs, and computers were placed in strategic faculty work area locations throughout the campus. Continuous purchase of hardware in the late eighties forced us to organize our hardware. The key question was, "Should they be located in labs or in every classroom", clustered for out of class assignments and projects or on every teacher's desk?" Upper School English classes instructed all students in word processing. Macintoshes replaced the Commodores in Orenstein and were also introduced in the Upper School. A mix of Apples, Macs, and PCs caused an increased demand for more faculty and staff instruction and technical support.

Separate writing labs, the Upper School Goldman Lab and a Middle School Writing Lab, were established in the early **nineties**. Lubrano and Orenstein were used for general computer science and programming instruction as well as use by classes who needed access to computers. The Macintosh Multimedia Lab for Upper and Lower School was opened in 1992. Lubrano and the Multimedia Lab were networked by daisy chains at this time, enabling students to use software and hardware more effectively. In 1994, a substantial gift by parents of seniors allowed the installation of 10 computers, a wired network, and a CD Tower in The Walter Jones Library. Librarians began retrospective conversion of materials, though it would be several years before the electronic catalog would be open to users. Students had access to Encarta Encyclopedia, SIRS and Proquest for magazines and newspapers, and several other educational titles on CD via the tower. A single printer was programmed to handle both MAC and PC output.

In the decade following the mid-nineties, DVD players, digital cameras, scanners, CD-ROM disks, and color printers were added to enhance instruction. Classrooms around Lubrano and Goldman were connected to the lab's file servers, further enhancing computer capability and availability. The Multimedia Lab and The Walter Jones Library were equipped with modems, telecommunication software, and Internet dial-up capability. Hardware and software were standardized campus-wide, with the Lower and Middle Schools working exclusively with Macs, and the Upper School with either Macs or DOS/Windows systems. The library supported both platforms with 10 Macs and 10 PCs for library users and several PCs in the librarian's work area for library administration. Instruction was given in Word Processing, Spreadsheet and Business Applications, and Use of Macintosh Computers with Multi-application Clarisworks. In addition to faculty/staff workshops, a number of presentations and hands-on learning situations were offered to Parents' Association members throughout the academic year. Students in all three divisions were encouraged to use computers daily in a wide variety of classroom activities.

Today, word processing usage is without a doubt, daily and universal, as is access to the Internet from any building on campus. Initially, "computer literacy", application usage, and programming language (BASIC) classes were the focus. These have expanded to a variety of courses, such as Robotics, Music and Computers, Design in Graphic Art, Spreadsheet Applications, C++ and JAVA Programming, Multimedia Applications, Exploring the Internet, and Independent Study. Lower School students, working in their classrooms and the Multimedia Lab, participate and practice with keyboarding lessons, language arts activities, mathematical tutorial and enrichment, *I/LOGO* programming, and *Kidspiration* and *Inspiration* creative thinking activities. Required Middle School computer science courses in the sixth and seventh grades provide students with experiences with application tools of word processing, database management, spreadsheets, graphic art and drawing, *Lego/Logo* programming, Web page design, and multimedia presentation. Eighth graders are required to take a 10-14 session, Research and Technology, in which they learn about analyzing the topic, using a variety of print, online, and Internet sources, evaluating and citing sources used, and the ethical issues of gathering information and using technology. All Middle and Upper School students have their own Internet access accounts, and Lower School students use class accounts. An Upper School Computer Education Department offers Computer Science classes. Math classes use graphing calculators for graphing, analyzing, and solving problems. Science classes use computers to gather experimental data through probes, digitizing data and storing, manipulating, and graphing it. Social studies classes use videodisc, CD-ROM, and whiteboard technology to introduce and supplement lessons and discussions. Technology is also used effectively for writing and testing situations by students with special needs. All faculty, staff, and administrators have their own E-mail accounts which allow them to exchange mail and publish a personal web site to the world at large.

Technology at Moses Brown no longer stands on its own as simply a tool. It has been integrated into the lives of nearly every member of our community, both formally and informally and is used daily and routinely for communication and research. We have moved forward from tool to critical thinking in our focus.

Assessment of Technology Skills, Knowledge and Attitudes

The United States Department of Education recently completed a study of teachers' use of educational technology in their classrooms and schools.³ The study focused on teachers' use of computers and/or the Internet for instructional purposes.

³ U.S. Department of Education. National Center for Education Statistics. Teachers' Tools for the 21st Century: A Report on Teachers' Use of Technology. NCES 2000-102 by Becky Smerdon, Stephanie Cronen, Lawrence Lanahan, Jennifer Anderson, Nicholas Iannotti, and January Angeles. Washington, DC: 2000.

“Findings presented in this report indicate that about half of the teachers with computers available in their schools used them for classroom instruction. Moreover, teachers’ use of technology was related to their training and preparation and work environments. As described in detail in the report, teachers were more likely to use these technologies when the technologies were available to them, available in their classrooms as opposed to computer labs, and available in greater numbers. Moreover, teachers who reported feeling better prepared were more likely to use these technologies than their less prepared colleagues. Finally, teachers who perceived that lacking computers and time for students to use computers as great barriers were less likely than their colleagues to assign students to use computers or the Internet for some instructional activities.”⁴

The most recent Rhode Island School Accountability for Learning and Teaching (SALT) Survey⁵ has ample data concerning the number and quality of computers deployed in schools. The current state student to computer ratio is about 6:1. At Moses Brown the ratio is about 4:1. Across the state 59% of computers in schools are three (3) or more years old. Less than 50% of Moses Brown's computers are three (3) or more years old.

Although a great deal of data has been collected about hardware, there is little quantitative data concerning student and staff technology skills, knowledge, and attitudes at Moses Brown School's three (3) Division levels (Upper, Middle, and Lower Schools). We do, however, have some information. In a recent survey, Moses Brown's faculty ranks the need for technology training high. Nationally, improvement plans generally list increasing the use of technology as a way to improve the school's work. ***Need to increase communication with parents is one of Academic Technology Department's (ATD's) goals.*** Implementation of this plan includes electronic communications and development of the school's Intranet and Extranet. Finally, anecdotal reports from faculty indicate that computers motivate students to learn and can increase the quality of student work. As part of the implementation of the Technology Plan 2004, we need to search out and/or create tools by which to measure the real impact of the infusion of technology into Moses Brown School's classrooms.

Software Examination:

The Divisions have undergone significant changes in the quantity and category of software used by students and faculty. All computers are now capable of storing software on their local hard drives, using multimedia, running Internet applications (including E-mail), and connecting to servers to run applications and store data. Among the software titles include curriculum-based applications, productivity tools, communication packages, web page construction tools, and Internet applications. Moses Brown School's two libraries, the Walter Jones and Debbie Goff Libraries, have established electronic, computer-based access to their card catalogs.

Acquisition of new software follows guidelines established by ATD. Appendix E of this document outlines these guidelines. New software acquisitions must adhere to these guidelines in order to protect the integrity of the Moses Brown School network and provide the best functionality for the curriculum it will support. Whenever possible, newly acquired software should be installed on a file server at the appropriate Division level. Software that is free or purchased by paid subscription should be installed following the same guidelines.

Students have several levels of general productivity software that are age appropriate for word processing, spreadsheets, database work, decision-making, publishing, presentation design, crossword puzzle creation, newsletter writing, etc. Several of the programs have a built-in spell checker and/or thesaurus; others have report writing tips, and the capacity to read the text aloud to the student. For example:

For example, acquired software for the Lower School include such titles as *Kid's Works*, *Kidspiration*, *ClarisWorks for Kids*, *AppleWorks*, *Microsoft Office*, *Acrobat Reader*, *Graph Master*, *Data-Studio-Science*, *Hyperstudio*, *Aldus Superpaint*, *Time Liner*, *Multicultural Timeliner*, *All the Right Type*, *Math Blaster*, *World Discovery Delux*, *Zip Zap*

⁴ U.S. Department of Education. National Center for Education Statistics. Teachers' Tools for the 21st Century: A Report on Teachers' Use of Technology. NCES 2000-102 by Becky Smerdon, Stephanie Cronen, Lawrence Lanahan, Jennifer Anderson, Nicholas Iannotti, and January Angeles. Washington, DC: 2000. pp. iv-v.

⁵ Rhode Island Department of Education. Information Works. <http://www.infoworks.ride.uri.edu/>. 1999.

Map, Neighborhood Map Machine, The Faculty Deluxe, Teasers by Tobbs, Where in the World is Carmen San Diego, and The Factory Deluxe.

Specifically,

Lower School

- Students and staff use specialized software called *Kidspiration* for brainstorming, developing ideas, organizing thinking, and creating visual diagrams.
- *HyperStudio*, *AppleWorks Slide Show*, and *Claris Home Page* are used for multimedia presentations.
- Electronic research is done through Intranet access using *Netscape*. Search engines used are *Yahooligans* and *Ask Jeeves for Kids*. Catalog searches in the Debbie Goff Library are performed using OPAC. Faculty use a wide variety of Internet Websites.
- Networked versions of content specific software are available. Site licenses exist for software in specialized areas.
- A network connection provides faculty with login control and access to document storage.

Middle School

- For general productivity (including word processing, database work, spreadsheet work, drawing, and painting) staff and students use *AppleWorks*. They also use *Word* and *Excel* at the discretion of individual teachers.
- Presentations are created in *HyperStudio*. (Occasional use of PowerPoint at individual discretion).
- Computer operations are studied by disassembling old computers.
- Programming is introduced using *Logo* with *LCSI Microworlds* and *LEGO/Dacta*. Programming logic is introduced using *Tic-Tac-Toe* and source code for *Eliza*.
- WebPages are created using, *Text Edit*, *AppleWorks*, and *Netscape Composer*.
- Electronic research is done in a variety of ways. Students work independently on the Web using *Netscape*. They also conduct research using an assortment of Web-based data subscriptions, such as *World Book Encyclopedia*, and. In addition, students use Internet service-based electronic databases accessed via the network (e.g., *SIRS Researcher* and *Proquest*) purchased by the Walter Jones .
- Software is available for the specific needs in certain content areas. In the past, these titles have included *The Geometer's Sketchpad* and *Tesselmania* in Math; *Decisions, Decision, Immigration*, and *Roman City* in Social Studies; *Gravitation* (solar system design and modeling), *Continental Drift*, *Wator* (predator/prey modeling), and *Vernier Software* (lab probes) in Science; and, *Inspiration* and the *Decisions, Decisions Series* in a few subject areas.

Upper School

- For general productivity (including word processing, database work, spreadsheet work and presentations) staff and students use Microsoft Office XP.
- Electronic research is conducted using a wide variety of search engines via Microsoft's Internet Explorer and through the Web-based subscriptions to Sirs, Proquest, Books in Print, Gale Literature, WorldBook Online, and Roth poetry/essays/short stories. The library also furnishes links to CLAN RI Public Libraries, SAILS MA Public Libraries, and National Geographic indexes.
- Web page development is accomplished using FrontPage.
- Graphic arts classes use Adobe Photoshop and ImageReady. Music and Computer classes use Allegro and Fruity Loops. Presentation projects for PC Applications and Multimedia course are developed with PowerPoint, MS Photo Editor, Apple's Quick Time and Ulead video editing software.
- PowerPoint and curriculum-specific software are used in several of the curriculum disciplines, including mathematics (Minitab), world languages and science.

Administrative

- For general productivity (including word processing, database work, spreadsheet work and presentations) staff uses Microsoft Office.
- Student data and grade reporting is currently kept separately by division. The Upper School uses the *Blackbaud* system. Efforts should be made to move all student data within this system.

- Campus communications are maintained using a *First Class* e-mail server.
- Web page development is accomplished with either *Dreamweaver* or *Netscape Composer*.

Hardware Examination:

Each Division has modern computer equipment and high-speed network connectivity.

- All campus buildings have been wired throughout, and all buildings connect to the Moses Brown School network.
- Electronic communication via E-mail and the Internet is possible throughout every campus building.
- Each Division and all major departments have a file server on which student, faculty, staff, and administrators documents can be stored. File storage for the Upper School will be available in the fall 200X.
- All students, faculty, staff and administrators have access to a computer, printer, and electronic files.
- In general the placement of computers at Moses Brown School is determined by function. New computers are installed in the computer labs and libraries to facilitate training in the new technologies. Existing lab computers are distributed throughout the school in order to augment classroom instruction.
- LCD projectors and TV converters are available for teachers and students to make large group computer presentations.
- Digital still cameras, digital and analog video cameras, scanners, and CD burners allow students and teachers to create digital media for multimedia productions.
- The Lower and Middle Schools are equipped with wireless laptops, printers, and presentation devices. These “portable classrooms” should help the ATD discover how technology can best be used to reform the teaching – learning environment using this latest innovation.

Lower School

- The Lower School has X iBook wireless laptop computers for group instruction and at least 1 Macintosh computer per classroom for faculty use and daily classroom activities.
- There are 4 administrative PCs, including the librarian’s workstation.
- All of the computers in use in the elementary buildings are capable of containing the volume of software necessary to support existing educational programs.
- The Lower School library has computers for student research and productivity.
- Art, music, resource, and other special areas have computers for staff and student use.
- All computers are able to print to inkjet printers or high quality laser printers.

Middle School

- All workstations are capable of running the full complement of available software⁶.
- The Middle School has two computer labs, Orenstein with X Mac computers and 1 file server, and the Reading Lab with X Macs. Orenstein is scheduled with technology classes, and is open for classroom teachers to use for projects.
- The Middle School has X iBook wireless laptops. Each grade level team has been assigned X laptops and a networked laser printer, which can be distributed among the team’s classrooms.
- There is at least one workstation assigned to each classroom for faculty use and classroom activities.

Upper School

- All computers carry a full complement of current productivity software.
- The Upper School has three computer labs (Lubrano, Quest⁷, and Goldman).
- All classrooms and work areas have at least one computer and have access to either a local, local-shared, networked-laser, or a color networked-inkjet printer.
- The graphics applications labs use the most capable computers.
- Department areas have computers restricted for faculty-only use.

⁶ Except for Lego/Logo lab machines

⁷ To be replaced in the next academic year with a wireless lab.

Walter Jones Library

- The Walter Jones Library is a shared facility for middle and upper school students, as well as the rest of the school community. X Macs and PCs are dedicated to research and production of papers and projects. All allow access to the Internet and the school's Intranet. Two PCs are dedicated to the OPAC (Online Public Access Catalog). The electronic catalog and the library's online services can be accessed from all computers on campus as well as from home.

Network/Telecommunication

Moses Brown School currently maintains a local area network that connects all schools and all administrative offices. This network is connected to the Internet through a shared connection. In July, 200X, a “firewall” and Internet filter were installed to protect the network from outside hacker attacks and to prevent students from linking to inappropriate Internet sites. Within the network, “virtual” networks have been created to separate administrative services and student data from the portion of the network accessed by students. Security within the network is paramount to the operation of the school. Moses Brown must continue to invest in appropriate technologies such as firewalls, anti-virus, anti-spam, content filtering, etc.

- A network file server manages the workstations and files for each Division.
- The administrative offices have their own server for student information data.
- The library has a file server that contains the catalog databases for both of the school’s libraries.

Curriculum Status and Initiatives

The ATD believes that technology is a tool in the acquisition of knowledge. It ought to be used to help achieve performance standards, such as those adopted by the International Society for Technology in Education (ISTE). As part of a long range planning process, the Technology Committee advises that Moses Brown School adopt student performance indicators based upon the National Educational Technology Standards for Students developed by the ISTE as an integral part of this Technology Plan.

Assessment instruments must be developed to determine the success of the implementation of these standards. As part of the process, data from existing state and national surveys needs to be reviewed for comparison. The results of such a review should be considered in the light of current state and local initiatives such as the Model Classroom Initiative and the School Leadership Initiative⁸. A Moses Brown School Technology Team of informed school Divisional personnel and community members should be reconstituted to assume responsibility for such an assessment and report their findings to the school’s Administrative Council.

Professional Development Activities and Structures

A primary strength of Moses Brown School’s professional development program is the existence of three Technology Educators, one for each Division. An additional faculty member in the US History department participates as a member of the team. All-school hands-on workshops on a variety of technology topics for faculty, staff, and administrators have been and should continue throughout the school year.

More importantly, Moses Brown School’s Technology Educators work daily with the staff, faculty, and administrators and students during the school day to model current instructional practice and to provide information about available hardware, software, and Internet resources. Their 1:1 hands-on technical instruction is an integral part of their contractual, co-curricular responsibilities. This model of professional development, delivered through Technology Educators, is one that other schools are utilizing throughout Rhode Island and around the country.

Staff development can be delivered in other ways. For example, staff development days, where technology workshops are offered, can be built into the school calendar each year. Summer classes and workshops are offered by a variety of institutions, such as universities, Tom Snyder Productions of MA, and MacWorld. Furthermore, the

⁸ <http://www.iet.org>

ATD will evaluate and purchase self-paced instructional tools that will allow for staff and faculty to pursue development at their own convenience. The Technical Support Specialist will reconstitute the Office Computing Group to address the training needs of the administrative offices.

Maintaining up-to-date skills and knowledge is imperative to the successful operation of the department. Sufficient resources should be made available via the department's budget for professional development activities annually.

Department Staffing

Technology Educators have been instrumental in integrating technology into education at Moses Brown School. It is imperative that staffing in this area be maintained as appropriate. Recommendations on increases in staffing levels will be made annually after proper review. The current ATD staff includes the following positions⁹:

- 1 Director of Technology
- 1 Technical Support Specialist
- 4 Technology Educators — 2 Upper School, 1 Middle School, and 1 Lower School
- 1 K-12 Academic Technology Curriculum Chair

The school-wide ATD is led by the Director of Technology, who is responsible for the use of technology in both the instructional and administrative arenas. The Director is responsible for the integration of technology into the K-12 curriculum, for the interface of technology through telecommunications, for the use of technology in research and science facilities, and for technical support of staff and administrators. The Director is also responsible for the Moses Brown School Network.

The Technical Support Specialist is responsible for technical support of the staff and administrators. The Specialist also provides assistance to the Director on a variety of projects and supports the Technology Educators. A full-time Upper School technology faculty member teaches computer science classes in the Upper School curriculum sequence. This faculty member also supervises the Lubrano Lab and assists with the support of the Friend's Hall faculty. A second faculty member from the history department supervises the Goldman Lab and is responsible for Upper School faculty technical support in Middlehouse. A full-time Middle School technology faculty member teaches all of the computer science mini-classes in the Middle School curriculum sequence, supervises the Orenstein Lab, and is responsible for Middle School faculty technical support. A full-time Lower School technology faculty member teaches all of the computer science classes in the Lower School curriculum sequence and is responsible for Lower School faculty technical support. The roles of the Technology Educators will change as a result of the implementation of the new curriculum. The plan document will be amended to reflect this modification.

The K-12 Academic Technology Curriculum Chair is responsible for coordinating development and integration of the cross-divisional curriculum for the school. Implementation of this plan will be carried out in conjunction with the Technology Educators and the Director.

⁹ Specific job descriptions for these positions are on file in the Academic Technology Office or Business Office.

Annual Expenditures

Recognizing the realities of the current financial resources of the school and that this department supports the **entire campus and every program**, a proper balance needs to be established by the ATD in terms of expenditures between departmental needs, other instructional programs, network maintenance, and the administrative offices. As should be evident, the adoption of this plan will require significant additional funds in the yearly departmental budget. With technology becoming an integral part of every aspect of the community, other departments must contribute resources to support their own needs.

GOALS and PRIORITIES

Students will be able to:

- Demonstrate skills in the use of computers and other learning and information technologies and applications.
 - These skills are listed in the following Curriculum section.
- Integrate strategies to think, create, model real-life scenarios, make informed decisions, and problem-solve with technology.
- Understand the ethical, cultural, and societal issues related to technology.
- Practice responsible use of technology systems, information, and software.
- Use technology in personally meaningful ways for their own development as independent learners.
- Use technology to increase their skills and knowledge in the various content areas and to promote creativity.
- Access information from remote sources, exchange ideas, conduct research, and communicate thoughts and ideas using electronic technologies.
- Use telecommunications to collaborate and interact with peers, experts, and other audiences and to publish.
- Use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Faculty and staff will be able to:

- Participate in appropriate, meaningful and ongoing technology training.
 - Before the start of their first year, new teachers will be trained in use of the network and E-mail systems.
- Demonstrate a sound understanding of technology operations and concepts including those described in ISTE's Technology Standards for Students.
- Plan and design effective learning environments and experiences supported by technology.
- Implement curriculum plans that include methods and strategies for applying technology to maximize student learning.
- Apply technology to facilitate a variety of effective assessment and evaluation strategies.
- Use technology to enhance their productivity and professional practice.
- Understand the social, ethical, legal, and human issues surrounding the use of technology in K-12 schools and apply those principles in practice.
- Communicate with peers frequently and efficiently through a variety of electronic resources.
- Fully implement electronic record keeping and data base systems.

Administrators and managers will be able to:

- Increase the efficiency and effectiveness of the administrative offices through integrated data systems.
- Manage and support a school-wide information system via the Web
- Standardize the Web sites as an important communication tools for the school community and for the community at large.
- Enforce the Ethical Use Policy.

The greater Moses Brown community will be able to:

- Participate in school learning and access information resources
- Participate more actively in the educational process.
- Employ technology to communicate with teachers and administrators effectively.
- Retrieve information about school activities and policies using electronic technologies.

Note: The incorporation of information technology makes the school community and its work more accessible to the greater Moses Brown community, including parent(s) and guardian(s).

PLAN PROPOSALS

Scope: The Technology Plan is designed to recommend the major projects and focuses for the ATD over the next three years. It should be noted that the proposals represent ongoing processes that extended beyond the time frame of the plan. The ATD supports the technology initiatives of groups outside of the department. Furthermore, assistance from these Departments or Divisions (D/D) will be required to implement these recommendations successfully. Insufficient support will result in their failure. In addition, while the ATD supports the technology community-wide, it does not oversee the entirety of technology in the community. Oversight, personnel, and resources from each D/D are required for the successful implementation and use.

General Software Priorities

The goal of Moses Brown School is 100% compliance with all software copyright laws and agreements. No software will be installed on a school machine without a proper license. Any software found without a license shall either be removed or a license shall be purchased¹⁰. Funding for this license shall either come from the ATD, with the approval of the Director, or the respective D/D. Individual D/D managers are ultimately responsible for ensuring that their staff/faculty members not installing unlicensed or unapproved software.

The ATD will maintain, as part of the annual budget, the following minimal standards:

- All computers will be licensed for the following software:
 - Productivity Package (i.e. Microsoft Office Professional)
 - Anti-Virus Software (i.e. Symantec Antivirus)
 - Cloning Software (i.e. Norton Ghost)
- All network servers will have the appropriate licenses:
 - Network Operating System
 - Backup and retrieval software
 - Antivirus Software
- The campus email system will have enough licenses for each employee requiring access
- Necessary monitoring and analysis tools

Curriculum based software will be purchased after full review by the ATD and the appropriate D/D.

Please refer to Appendix E for details on the approval process for new software.

Budget Impact: The software budget line item should be able to support the necessary license requirements. In addition, sufficient funds are needed to support the department's responsibilities in regards to the campus network, web sites, etc. Furthermore, specific allocations of funds should be available to support the technology instruction in each of the divisions. This may take the form of either updating older programs or purchasing appropriate new titles.

General Hardware Priorities

It is imperative that hardware purchased for the Moses Brown School network be interoperable and constructed to withstand a school environment. A key to ensuring the interoperability, stability, and usefulness of new technology is to purchase standardized nationally developed and distributed devices with extended on-site warranties.

Workstations

- Adequate Use: The ATD will work with each D/D to determine the appropriate student to computer ratio (or total number of machines available).
- Purchased with three-year extended on-site warranties.
- Each workstation acquired with enough built-in performance to ensure three years of functional service. Some workstations will be used beyond three-year replacement cycle as determined by the ATD.

¹⁰ Subject to the discretion of the Director of ATD.

- A yearly review of state of the art technology and curriculum needs determines the standard for the next year.
 - Special Emphasis will be placed on newer handheld and portable computing
- Beginning with the 200X-0X Academic year, no further Apple computers should be purchased for the Middle School, except on an emergency replacement of an existing workstation basis. All new workstations should be MS Windows compatible.
 - First Round: Faculty workstations in the Middle School.
 - Second Round: Student workstations in Middle School. Orenstein labs machines will be upgraded and moved to Lower School faculty. The wireless Ibooks will be added to the Lower School collection. At this time the Macs will also be replaced in the Walter Jones Library.
 - Special Exemptions can be made on an individual basis in consultation with the ATD.
- Budget Impact: While beyond this plan, with the elimination of the Apple computers on campus, the software agreement with Apple Computer can be eliminated giving a net gain of approximately \$X per year in the future. These funds will be used to support instructional software. There will be a need for a significant expenditure from the Academic PPPRSM of about \$X to accommodate the proposed transition.

Servers

- Purchased with three-year extended on-site warranties and UPS battery backup.
- Adequate document storage for all students and staff.
- Mission-critical servers with built-in redundancy to help ensure network stability (e.g., additional power supplies that take over in the event of equipment failure).
- Adequate data storage technology

Management

- Management of the desktops from one central location for purposes of software distribution and support.
- Policies will be established for student and faculty laptops and other personal devices on the network.
- ATD personnel redundantly trained.

Infrastructure

- Cabling and infrastructure will be installed to support 100 Mbps Ethernet to the desktop, and have the flexibility to upgrade to faster technologies.¹¹
- Connectivity devices will be manageable and will have a three to five-year warranty and replacement cycle.
- Cabling infrastructure will be installed with certified components and will have a warranty backed by the manufacturer and installing vendor.
- Annual on-site support agreements will be purchased for all connectivity equipment with 24/7, next day response time.
- All wireless devices will be able to support the campus network architecture and be compatible with current 802.11b/g standards.

Replacement/Maintenance

- Workstations acquired for a three to four year life cycle. However, changes to this cycle may be made if determine appropriate or necessary by the ATD.
- Maintenance contracts, where applicable, budgeted in AT operating budget.
- Limits on repairs should not exceed 50% of current value.

Peripherals (e.g., scanners, digital cameras, projection devices, CD Recorders, printers)

- Working with the D/D an appropriate level of printer availability shall be determined. The ATD through related budget fund shall maintain this quantity. Additional printers beyond this must be purchased through D/D budgets.

¹¹ Beginning in the 2005-06 school year all network equipment should support gigabit network speeds.

- Scanners, cameras, etc. that directly support the Technology program shall be purchased through department funds. Non-Technology related purchases shall be made through D/D budgets with consultation with the ATD to ensure compatibility.
- When possible, all peripherals should have the capability to be networked and remotely managed.
- Sufficient funds should be made available every year to expand the installed peripheral base.

IMPLEMENTING THE PLAN

Curriculum

Philosophy: The vision of the curriculum is to integrate technology-specific instruction into a regular class section. This will allow students to learn appropriate and relative computer skills, but it will also deliver the necessary instruction to the faculty member, as well. In addition to educating our students, it is expected that our faculty will be able to gain sufficient computer skills to allow them integrate more technology into their curriculum without the assistance of a technology educator. Over time this will allow the technology curriculum to move to more advanced topics as the basic skills will be taught by regular faculty.

Currently, the redesign is in progress as part of the larger cross-divisional curriculum review. After the adoption of the new instructional plan, the details will be appended to the plan¹².

Improving Communication and Knowledge Sharing

Philosophy: The modern technology department has moved beyond just fixing computers and printers. As Moses Brown moves into the future, and technology becomes more prevalent and a better understood tool, the ATD must look at how information, data, and knowledge is managed, presented, and stored.

- Paperless Offices/School

Philosophy: There will need to be a fundamental change in community culture if this initiative is to succeed. Old habits are hard to break, and many members of the community may resist. The lead for these changes must come from Council, Division, and Departmental managers; it cannot come solely from the ATD.

Sufficient access must be made available to every member of the community to ensure proper notifications are received. This needs to apply to not only regular faculty and staff who either have a computer on their desk or access through a common utility room, but other staff members who do not use a computer on a regular basis.

In the beginning, this transformation should take the form of the elimination of as many paper reports as possible. These include Daily Bulletins, meeting agendas, calendars, etc. The items should instead be placed and viewed via the campus Intranet or mail system.

Using network copiers with scanning capability to convert new and existing files into an electronic format, a significant impact can be made in the amount of paper files that are kept on campus. Document management and retrieval software can be used to fetch the necessary information quickly in the future. Furthermore, older archival items can be scanned or photographed and stored in similar fashions.

Finally, working with each D/D, the ATD will explore other ideas to move communication towards an electronic format. Among the benefits of this endeavor will be reduced printing costs, less required storage space, lower printer maintenance costs, and quicker and easier access to information.

- Budget Impact: In terms of increased costs, there is a tangible expense of approximately \$X per computer in software licensing plus an additional \$X if another email license is required, in addition to any needed hardware replacement/upgrade. Intangibly, there will be an increased cost in support time required for these machines which will reduce the overall availability in technical support on campus.

¹² Please refer to Appendix F for the current working document.

Furthermore, an undetermined amount of additional software and hardware will have to be purchased as the project evolves.

- Time Frame: This will be an ongoing project for the entire community.
- Improved Web-based Communications:
 - Extranet/Intranet/Internet - As part of the initiative to improve communication, the use of the Internet as a primary means of information delivery is recommended. The current format, while excellent in its simplicity of delivering relevant communications to members of the community, does not take full advantage of the capabilities of the Internet. A secure system giving access only to the appropriate users (students, parents, staff and faculty), while giving more features, is preferable. The new system would replace the content currently being offered on for the Extranet (MBNet (fc.mosesbrown.org)) and Intranet (intranet.mosesbrown.org). As the content can be personalized by user, information can be tailored to the specific recipient. For example, forms that are required to be signed by a parent can be individualized so that they contain the pertinent information for that student and privacy will be assured. Possibilities to extend assignments, grading, attendance, and other information online should be available via this new system. This new system will provide greater community access to and transparency of information and community activities.
 - Budget Impact: Researched systems will have annual renewal costs of approximately \$X per year and a setup cost of \$X.
 - Time Frame: Depending on availability of funds, it is recommended that the service be purchased during the fall 200X with a launch in January 200X. Once the new system has been designated, an implementation plan will be developed with all appropriate stakeholders.
 - Email- As use of email increases as a primary method of communication, availability and functionality becomes crucial. An examination of the current system, First Class, will take place to make sure that it is meeting this standard. The result of this examination will likely be one of four possibilities:
 1. Current System, properly supported, is fine.
 2. Current System with platform upgrade is fine.
 3. Outsource hardware maintenance to third party.
 4. A new system is desired.
 - Budget Impact: Depending on the option selected, the budget impact will vary.
 - Time Frame: This will be an ongoing process.
 - Calendaring and Resource Scheduling-The use of individual and group calendars has increased over the years. There is a clear need for a single system to coordinate all of the scheduling needs for all departments on campus.
 - Budget Impact: If the current functionality of the First Class mail system does not adequately meet the requirements, we estimate that this will require \$X in software expenses. A server will be acquired for this purpose during Summer 200X.
 - Time Frame: Initial setup and testing should be completed during Summer 200X.
 - Collaboration Technologies- Allowing for students, faculty, and staff to electronically collaborate on assignments and other projects will become increasingly important. Access to these resources will be made both internally and externally. In addition, part of this will also include online file access and

storage for students. Enabling this type of information sharing will be a key to the further integration of technology into the curriculum.

- Budget Impact: Depending on the technologies selected, the budget impact will vary.
- Time Frame: Initial setup and testing should be completed during Summer 200X. However, this will be a continuous process as technologies improve and change.
- Comment System: The comment grading system is an important method of providing feedback to students and parents of the academic achievement/progress of the individual. However, the current system is inefficient and hard to manage. Users with different computer platforms and various skill levels further complicate the process. The recommended solution is to utilize a customizable online service. An easy to use, single interface should eliminate the issues of faculty ability and computer compatibility. While there is a significant cost to the new system, the labor hours saved should far exceed the financial impact. Furthermore, this will lead to greater communications with parents.
 - Budget Impact: The proposed system will cost approximately \$X with an annual cost of \$X depending on which divisions participate. The Divisions will be responsible for the relative annual costs.
 - Time Frame: The service should be purchased for the US and MS for the 200X-0X school year. The LS should start to participate in the 200X-0X school year.

Digital Portfolios

Philosophy: Electronic portfolios are selective and purposeful collections of student work made available on the Internet. Portfolios focus on the students' reflections on their own work. They are records of learning, growth, and change. They provide meaningful documentation of students' abilities. Electronic portfolios provide information to students, parents, teachers, and members of the community about what students have learned or are able to do. **They represent a learning history.**¹³

Teachers and students may construct portfolios in literacy and writing, science, math, the arts, or any other subject area in the curriculum. Portfolios may also be more inclusive, containing samples of work across curricular areas.

Portfolios bring together curriculum, instruction, and assessment. Through the use of portfolios, teachers and students can develop a shared understanding of what constitutes quality work and acquire a common language for evaluating students' accomplishments. The use of portfolios leads to classrooms that are student-centered rather than teacher-centered, because students accept more responsibility and become agents in their own education.

The technology requirement for graduation for the Upper School should be changed for the freshman starting with the Class of 200X so that each individual student completes a 4-year Digital Portfolio. The contents and requirements of this assignment will be determined by the Curriculum Committee and ATD.

The Middle School and Lower School will also participate in this program. Working with the appropriate personnel, a plan for integration of these portfolios into the curriculum will be developed. The level of involvement the student has in the creation of their portfolio will vary according to the grade levels.

In addition, each Administrator and faculty member should be required to maintain a web page, updated each year to highlight work and accomplishments. These pages should be made available via the Extranet web site.

¹³ <http://www.ash.udel.edu/ash/teacher/portfolio.html>

- Budget Impact: \$X for Campus Web Editing software license (i.e. Macromedia Studio or other prepackaged software product) and a large storage capacity (~\$X) server.
- Time Frame: During the 200X-0X year, with consultation with the Curriculum Committee, the requirements for each division will be determined. The actual program will be instituted for the 200X-0X school year.

Smart Classrooms

Philosophy¹⁴: Classroom Design Principles that Improve Teaching and Learning

- Empower Faculty
 - Provide the technology that faculty request in enough campus classrooms to meet instructional requirements. Focus on a user-friendly approach with attention to simple controls.
 - Emphasize Flexibility
 - Serve multiple users with many teaching styles. Designs should include many options while excluding very few. Technology that faculty need must be permanently placed in the classroom. The design must permit projecting images on the screen and using the board at the same time. Classrooms should be easy to change as presentation technologies evolve and screen proportions widen.
 - Encourage Interaction
 - Create a collaborative learning environment with instructor as a mentor. Provide easy access around the room.
 - Stress Simplicity
 - Make classroom technology as simple, friendly and non-intimidating as possible. Technology should inspire presenters who rely on improvisation, spontaneity and audience participation. The addition of computers should not make simple AV devices like overhead transparencies, slides and television more difficult to use.
 - Expand Connectivity
 - Change classrooms from isolated to interconnected places with access to stored resources and live video connections. Include telephone lines (twisted pair), TV distribution (coax) and data connections (category 5). While the possibility of infrared wireless connections looms on the horizon, it is still prudent to include conduit in classroom designs. 10BaseT connects to centralized data repositories (servers) and from there to distant computers and the internet.
 - Contain Costs
 - Technology classrooms must serve the faculty well yet remain affordable. To make a significant impact on teaching, many technology classrooms need to be created around the campus, not just one expensive island of technology to impress VIPs. Self-service classrooms help reduce support costs.
- Budget Impact: \$X depending on technical and space requirements per classroom.
 - Time Frame: During the 200X-0X year, the budget should be increased to accommodate the introduction of 1-2 new smart classrooms per year.

Campus Network

Philosophy: An analogy of the campus network to the central nervous system would not be out of place. As schools and society, in general, become more information reliant, the reliability and performance of the campus network will become increasingly more vital to the operation of the community.

Security

¹⁴ Adapted from: <http://www.classrooms.com/principles.html>

Workstation Security- Passwords to accounts such as email, internet, file storage, etc. should be kept secret at all times and not posted near the users' workstation. Passwords should be changed every 90-120 days. D/D managers are responsible for making sure that staff/faculty follow the proper procedures.

Replace Firewall, Content Manager- The current firewall and content manager does not meet the current needs and requirements of the community. By instituting a properly configured and managed firewall on the network that is connected to the Internet, Moses Brown School will be able to guard against unwarranted attacks on the integrity of its data, users and systems. Content filtering will strengthen network security, while avoiding inappropriate URL access by employees and students with an inherent loss of productivity, liability, and bandwidth consumption; and inappropriate access with resulting ineffective learning.

- Budget Impact: Ideally this replacement will work within current budget, which is approximately \$X/year.
- Time Frame: Due to the complexity and importance of installing and configuring firewalls, this task will be implemented by the network administrator and contracted services during the summer 200X.

Upgrade equipment

To maximize the effectiveness of the campus network and the ability of the community members to utilize available resources, it is essential that equipment be in good working order and offer the appropriate level of service. In this, all network hubs should be replaced with switches capable of handling the multiple networks on campus with speeds of at least 100Mbps. These switches should also have the capability of expanding service speeds to 1000Mbps. During the 200X-0X school year, the network core should be updated with equipment to allow for the deployment of 1000Mbps networking. All new installations starting during the 200X-0X school year should support 1000Mbps networking. With all of the proposed enhancements to technology in this plan, it will be imperative to maximize the capabilities of the network and remove all slower legacy equipment.

- Budget Impact: Expanding the capability of the network core to accommodate the gigabit network speed will cost approximately \$X. New switches will cost approximately \$X each. Upgrading existing equipment will cost \$X each.
- Time Frame: This is an ongoing process.

Wireless Technology

Wireless networking began in the fall 200X in the Lower School. The following year the Middle School began utilizing the technology. The introduction of wireless technology was mainly due to parents' gifts funds. This allowed for the introduction of the technology to Moses Brown without a significant budget impact.

Lower and Middle School

- Budget Impact: The cost of a new PC or Apple portable computer is approximately \$X each. In addition, new networking equipment for the Middle School will cost approximately \$X.
- Time Frame: The Middle School Ibooks will be replaced during the 200X-0X school year. The North Wing wireless access will be replaced during the 200X construction.

Upper School

- Budget Impact: The cost of a new PC mobile computer is approximately \$X each.
- Time Frame: Mobile wireless labs will be rolled out for the 200X-0X school for the Upper School Math and Science Departments. During the 200X-0X school year, wireless access will be rolled-out for the Upper School Burnham House classrooms.

Other

- Software and Hardware Inventories- The ATD will maintain an annual software and hardware inventory of all campus machines. These inventories will be completed by May to incorporate the results in next year's purchasing decisions.
- Remote Access (Virtual Private Networks or VPN) - The ATD will evaluate the addition of allowing remote access to the campus for work by administrative users as a low priority project. The estimated cost of this project is \$X.
- Backup, Restore, Disaster Recovery, and Record Retention- The ATD will work with individual departments to develop effective data archival policies and procedures. Individual D/D will be responsible for determining and maintaining the relevant records with the Sarbanes-Oxley Act in mind. Other options, including a central storage solution, will be evaluated and implemented along feasibility, time, and budget line constraints.

MONITORING, EVALUATING, AND REVISING THE PLAN

Monitoring and Evaluation Process

The use of technology is intended to be an integral component of the K-12 curriculum. To ensure the continuous growth and improvement of Moses Brown's use of technology, a number of monitoring and evaluation processes will be maintained while other tools will be developed. Data will be gathered using a variety of tools and from a number of sources including students, parents, faculty, and administration. This information will be analyzed for possible modifications to our current technology utilization strategies. With these processes in place, our system will be better able to assist students in meeting the needs of the 21st century.

A Technology Team will be established and responsible for monitoring, evaluating, and revising the Technology Plan. The team will be a standing committee consisting of the Technology Educators, the Curriculum Coordinator, and volunteer faculty and staff from each Division and Administration. Members of the community will be invited to participate. The Director of Academic Technology will serve as chair of this team.

Annual reviews of the use, needs, skills, and integration by students, faculty, staff, and administrators will be conducted. Evaluation tools/metrics will need to be purchased/developed to monitor progress, improvements, and deficits. A point in time should be selected as a baseline for future comparisons. Students, teachers, administrators, parents and the general public will be encouraged to use the Moses Brown School Intranet/Extranet site to access information. The site should allow interactive communications between all interested parties.

Each Division will be encouraged to organize regular meetings of its faculty and staff to share technology-related information. These regular meetings will allow discussion and brainstorming. Technology portfolios and computer-based projects will be collected, published, and shared.

The Technology Team will be responsible for reviewing the technology-related suggestions of the school's various representative committees to obtain input toward the improvement of the overall technology program.

Incorporation of Evaluation Information into Ongoing Planning Process

The Technology Team will meet on a fairly regular basis. It will be responsible for the overall administration of the evaluation process. Based on the results of the evaluations, the Team will make recommendations concerning changes in technology and training, as well as plans to implement these changes. Upon approval, the Director of Academic Technology will oversee these modifications.

Process for Reporting

The success of this initiative requires that all stakeholders be invested in the planning and implementation process. Partnerships that support the efforts of this plan are essential for success. The composition of the Technology Team will reflect and utilize existing partnerships to establish and expand a strong network for information exchange. Processes for reporting include:

- The Director of Academic Technology will report recommendations of the Technology Team to the Head of School and to the Administrative Council.
- Reports to the Head of School, Administrative Council, and the Board of Overseers will be presented as needed to keep all constituencies up-to-date on the various stages of implementation of technology within the school.
- A section of the school's website will be developed to demonstrate the use and state of technology.

Process and Timeline for Ongoing, Long-term Planning

This Technology Plan 2004 includes short-term and long-term goals that will ensure immediate, intermediate, and future improvements in Moses Brown's instructional technology. The strategies will be acted upon on a regular, at least yearly, basis to implement, modify, and evaluate the plan.

- The Technology Team will be responsible for implementing and evaluating the three-year timeline on an annual basis.
- The Technology Team will develop an annual timeline based on the three-year plan for administering, collecting and analyzing survey data, and making recommendations.
- The Technology Team will create a process through which educators will share lessons that successfully integrate technology into the curriculum.
- The Technology Team will work with the ATD staff to provide technology training for staff members and to suggest implementation strategies.

APPENDICES

The contents of the following appendices are included to clarify and/or expand on Technology Plan 2004. The materials are either taken from existing Moses Brown School policy documents or from the sources cited.

Appendix A

Technology Foundation Standards for Students¹⁵

The technology foundation standards for students are divided into six broad categories. Standards within each category are to be introduced, reinforced, and mastered by students. These categories provide a framework for linking performance indicators within the Profiles for Technology Literate Students to the standards. Teachers can use these standards and profiles as guidelines for planning technology-based activities in which students achieve success in learning, communications, and life skills.

I. BASIC OPERATIONS AND CONCEPTS

- A. Students demonstrate a sound understanding of the nature and operation of technology systems.
- B. Students are proficient in the use of technology.

II. SOCIAL, ETHICAL, AND HUMAN ISSUES

- A. Students understand the ethical, cultural, and social issues related to technology.
- B. Students practice responsible use of technology systems, information, and software.
- B. Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

III. TECHNOLOGY PRODUCTIVITY TOOLS

- A. Students use technology tools to enhance learning, increase productivity, and promote creativity.
- B. Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

IV. TECHNOLOGY COMMUNICATION TOOLS

- A. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
- B. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

V. TECHNOLOGY RESEARCH TOOLS

- A. Students use technology to locate, evaluate, and collect information from a variety of sources.
- B. Students use technology tools to process data and report results.
- C. Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

VI. TECHNOLOGY PROBLEM-SOLVING AND DECISION MAKING TOOLS

- A. Students use technology resources for solving problems and making informed decisions.
- B. Students employ technology in the development of strategies for solving problems in the real world.

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Appendix B

Technology Foundation Standards for Teachers¹⁶

All classroom teachers should be prepared to meet the following standards and performance indicators

I. TECHNOLOGY OPERATIONS AND CONCEPTS

Teachers demonstrate a sound understanding of technology operations and concepts:

- A. Demonstrates introductory knowledge, skills, and understanding of concepts related to technology (as described in the ISTE National Educational Technology Standards for Students).
- B. Demonstrates continual growth in technology knowledge and skills to stay abreast of current and emerging technologies.

II. PLANNING AND DESIGNING LEARNING ENVIRONMENTS AND EXPERIENCES

Teachers plan and design effective learning environments and experiences supported by technology:

- A. Design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners.
- B. Apply current research on teaching and learning with technology when planning learning environments and experiences.
- C. Identify and locate technology resources and evaluate them for accuracy and suitability.
- D. Plan for the management of technology resources within the context of learning activities.
- E. Plan strategies to manage student learning in a technology-enhanced environment.

III. TEACHING, LEARNING, AND THE CURRICULUM

Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning:

- A. Facilitate technology-enhanced experiences that address content standards and student technology standards.
- B. Use technology to support learner-centered strategies that address the diverse needs of students.
- C. Apply technology to develop students' higher order skills and creativity.
- D. Manage student learning activities in a technology-enhanced environment.

IV. ASSESSMENT AND EVALUATION

Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies:

- A. Apply technology in assessing student learning of subject matter using a variety of assessment techniques.
- B. Use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.
- C. Apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication, and productivity.

V. PRODUCTIVITY AND PROFESSIONAL PRACTICE

Teachers use technology to enhance their productivity and professional practice:

- A. Use technology resources to engage in ongoing professional development and lifelong learning.
- B. Continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.
- C. Apply technology to increase productivity.
- D. Use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning.

VI. SOCIAL, ETHICAL, LEGAL, AND HUMAN ISSUES

Teachers understand the social, ethical, legal, and human issues surrounding the use of technology in PK–12 schools and apply that understanding in practice:

- A. Model and teach legal and ethical practice related to technology use.
- B. Apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
- C. Identify and use technology resources that affirm diversity.
- D. Promote safe and healthy use of technology resources.
- E. Facilitate equitable access to technology resources for all students.

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Appendix C

Ethical Use Policies

Lower School Ethical Use Policy

Moses Brown School provides computers and other instructional technology to students for use in classrooms, libraries, and computer labs. Most of our computers connect to other computers at school through the campus network. Individual wires, hubs, and switches connect all the computers together into the Moses Brown network, called the MB Intranet. In addition, our computers also connect to other computers around the world through the Internet and the World Wide Web.

Not all the information on the Internet is helpful, truthful, or responsible. Just like the information, not all the people on the Internet are responsible, and all users of the Internet need to be cautious and careful at all times. Each student must be able to make good decisions about appropriate and safe information and communication on the Internet.

Computers, software, the campus network, and the Internet are to be used only for class activities and other educational purposes. The school believes that the opportunities for worldwide interaction and international materials far outweigh the risks inherent in locating controversial and/or offensive materials that may be inconsistent with the expectations of the school.

Technology Rules for Lower School Students:

- Do not remove, change or add programs to any of the school's computers
- Do not change any program settings or desktop arrangements on any of the school computers. For example, do not change the location of any files.
- Do not access (look at) anyone's files without permission.
- Do not share an account name or password with others.
- Do not give your name, address, phone number, or other personal information to anyone on the Internet.
- Do not use profanity (swear words) or write inappropriate messages to others.
- Do not plagiarize (use another person's information as your own).

ETHICAL USE POLICY for Upper and Middle School STUDENTS

Moses Brown School provides access to a variety of hardware and software, as well as to the school's campus network and the Internet. The Internet is largely ungoverned, and Moses Brown School requires each individual to rely upon his/her own strongest virtues of integrity and responsible decision-making when using these vast resources. The school believes that the opportunities for worldwide interaction and international materials far outweigh the risks inherent in locating controversial and/or offensive materials that may not be consistent with the expectations of the school.

The effectiveness of campus services depends on users not altering configurations, appearance of the screens, or software setups on any computer or other piece of technology. This is particularly critical in shared facilities such as computer labs and libraries. While Moses Brown School does not offer email to students, the School permits limited access to personal email via outside providers such as Yahoo, AOL, and Hotmail. Receiving or sending email with inappropriate content, pornography, and/or text-encoded files that could cause potential danger to school equipment or files is a violation of the EUP and must be reported to a technology administrator immediately.

In order to use any campus technology and/or to be issued an Internet account, the official Ethical Use Policy (EUP) Agreement must be signed each year that a student enters a new division and held on file at the school. Students who are 18 years old may sign a EUP without a parent's co-signature. Students gone from MB for more than one term and students whose accounts have been revoked must sign a new EUP. Students will undergo a technology orientation when new to MB and periodically throughout their MB careers as technology changes.

Signatures indicate compliance with and understanding of the terms, conditions, and disclaimers as stated and implied in the document. If an individual is unsure about what constitutes permissible behavior, the individual holds full responsibility for talking with a technology administrator. It should be understood that technology administrators reserve the right to access all files, Internet logs, and electronic mail. Further, individuals using off-campus technology in a manner that causes harm to our community will be in violation of the EUP. Violation of the EUP may result in the restriction, suspension, or termination of technology use and/or account privileges, and the violator may be subject to school disciplinary action.

- **The use of campus technology must support the educational mission and rules of Moses Brown School.**
- **Willful destruction of hardware, software, or another person's data is considered "vandalism."** Included in this definition is the willful importation or creation of computer viruses. [Please note that the school cannot be responsible for lost or damaged files. We urge individuals to back-up all personal files.]
- **Altering set-ups, such as desktop icons and screensavers, and/or installing, copying, or downloading software to any MB computer, including laptops, is strictly prohibited.**
- **Assisting others in efforts to bypass network restrictions by sharing proprietary information, accounts, or passwords is unacceptable.**
- **Use of the school network for on or off campus communication is a privilege, not a right, and the privilege may be revoked if the rules are broken.**
- **General rules of "netiquette" and good judgment must be used.**
 - Examples include:
 - **Do not** share your passwords or your accounts with anyone!
 - **No** profanity or offensive messages may be sent!
 - **Do not** provide your name, address, phone number or any personal or school information about yourself or anyone else!
 - **No** form of harassment, bullying, or intimidation will be tolerated!
- **Technology administrators reserve the right to determine which Intranet and Internet functions are appropriate.** Internet games and "chats," for example, are not permitted. Buying and selling on sites such as EBay are also prohibited.
- **Downloading or copying music or video files, except for teacher-authorized school projects, is forbidden.**
- **Users of outside network services** (e.g., America Online or Ocean State Freenet) **must comply with all rules set forth by that vendor. State and federal laws and rules of conduct must be obeyed.** Illegal activities including copyright infringement and software piracy, for example, are prohibited.
- **Technology administrators may restrict or suspend an individual's access to campus technology and/or may recommend that the school take disciplinary action.**

ETHICAL USE POLICY for FACULTY and STAFF

Moses Brown School provides access to a variety of hardware and software, as well as to the school's campus network and the Internet. The Internet is largely ungoverned, and Moses Brown School requires each individual to rely upon his/her own strongest virtues of integrity and responsible decision-making when using these vast resources. The school believes that the opportunities for worldwide interaction and international materials far outweigh the risks inherent in locating controversial and/or offensive materials that may not be consistent with the expectations of the school.

The effectiveness of campus services depends on users not altering configurations, appearances, or software setups on any computer or other technology. This is particularly critical in shared facilities. Each individual is responsible for maintaining the integrity of the electronic mail system and for all mail and attachments sent or received under his/her own account. Receiving or sending email with inappropriate content, pornography, and/or text-encoded files that could cause potential danger to school equipment or files is a violation of the EUP. As of May 2002, no program may be loaded into or downloaded onto any school computer (including laptops) without express written permission of the technology administrative team.

In order to use any campus technology, to be issued an Internet account, or to receive an email account the official Ethical Use Policy (EUP) Agreement must be signed following an orientation program and held on file at the school. The signed agreement will be in effect during the term of employment at Moses Brown. Periodically, employees will be asked to undergo brief orientations as technology evolves.

Signatures indicate compliance with and understanding of the terms, conditions, and disclaimers as stated and implied in the document. If an individual is unsure about what constitutes permissible behavior, the individual holds full responsibility for talking with a technology administrator. It should be understood that technology administrators reserve the right to access all files, Internet logs, and electronic mail. Individuals using on or off-campus technology in a manner that causes harm to our community will be in violation of the EUP, and appropriate disciplinary measures will be taken.

Revised 6/2003

Technology Rules for MB Faculty and Staff:

- **The use of campus technology must support the educational mission and rules of Moses Brown School.**
- **Willful destruction of hardware, software, or another person's data is considered "vandalism."** Included in this definition is the willful importation or creation of computer viruses. [Please note that the school cannot be responsible for lost or damaged files. We urge individuals to back-up all personal files.]
- **Altering set-ups, such as desktop icons and screensavers, and/or installing software on any computer, including laptops, is strictly prohibited without express permission of a technology team administrator.**
- **Commercial use (e.g., buying and selling on EBay) of MB's First Class email system or Internet access is not permitted.**
- **Assisting others in efforts to bypass network restrictions by sharing proprietary information, accounts, or passwords is unacceptable.**
- **Use of the school network for on or off campus communication is a privilege, not a right, and privileges may be revoked under extreme circumstances.**
- **General rules of "netiquette" and good judgment must be used.**
 - Examples include:
 - **Do not** share your passwords or your accounts with anyone!
 - **No** profanity or offensive messages may be sent!
 - **Be wary when** providing your name, address, phone number or any personal or school information about yourself or anyone else! Teachers should be careful about ordering materials via Internet companies.
 - **No** form of harassment, bullying, or intimidation will be tolerated!
- **Technology administrators reserve the right to determine which Intranet and Internet functions are appropriate.** Games and "chats," for example, are generally not appropriate.
- **Users of outside network services** (e.g., America Online or Ocean State Freenet) **must comply with all rules set forth by that vendor. State and federal laws and rules of conduct must be obeyed.** Illegal activities including copyright infringement and software piracy, for example, are prohibited. See a member of the technology administrative team for guidelines of the "fair use" laws.

Appendix D

GLOSSARY

ATD

The Academic Technology Department is a department of the Moses Brown School, servicing the student, faculty, staff, and administrative technology needs.

Ethernet

A local-area network (LAN) architecture developed by Xerox Corporation in cooperation with DEC and Intel in 1976. Ethernet uses a bus or star topology and supports data transfer rates of 10 Mbps. The Ethernet specification served as the basis for the IEEE 802.3 standard, which specifies the physical and lower software layers. Ethernet uses the CSMA/CD access method to handle simultaneous demands. It is one of the most widely implemented LAN standards. A newer version of Ethernet, called *100Base-T* (or *Fast Ethernet*), supports data transfer rates of 100 Mbps. And the newest version, *Gigabit Ethernet* supports data rates of 1 gigabit (1,000 megabits) per second.

EUP

The EUP (*Ethical Use Policy*) is a policy approved by the Moses Brown School Academic Technology Department that defines the appropriate use of technology by students, faculty, staff, and administrators.

Gigabit

Gigabit networking speeds represents a transmission speed of 1000Mbps.

ISTE

The *International Society for Technology in Education* in Eugene, Oregon is a nonprofit professional organization with a worldwide membership of leaders and potential leaders in educational technology. It is dedicated to promoting appropriate uses of information technology to support and improve learning, teaching, and administration in K–12 education and teacher education. <http://www.iste.org/>

Mbps

Mbps stands for *millions of bits per second* or *megabits per second* and is a measure of bandwidth (the total information flow over a given time) on a telecommunications medium.

OPAC

Follet Software Online Public Access Catalog

Appendix E

Software Approval Process

Curriculum Support Software Approval Process:

- ATD personnel will assure compatibility and functionality of all new curriculum support software.
- Arrangements will be made for students with special needs, including the acquisition of software specific to their educational requirements.

Minimum Requirements:

- Networkable application (if applicable)
- Compatible with present Operating System
- Age appropriate
- Delivers intended functionality
- Doesn't duplicate functionality or conflict with functionality of existing software
- Fits into existing management/security structure
- Meets minimum established curriculum requirements (measures progress, etc.)

Policy Notes:

- No software will be installed on any school department machine that is not an approved piece of software for curriculum or an approved piece of productivity software.
- No personally owned software will be installed on any of the school's machines unless it has been put through the complete curriculum approval process.
- Library/media personnel provide technology to support existing curricula. They use a Selection Process that is consistent with the ATD's guidelines.

Administrative Software and Online Content Subscriptions Approval Process:

- Identify requested functionality.
- ATD previews and tests for minimum requirements.
- ATD recommends titles to appropriate department.

Minimum requirements:

- Networkable application.
- Compatible with present OS.
- Delivers intended functionality.
- Doesn't duplicate functionality or conflict with functionality of existing software.
- Fits into existing management/security structure.
- Meets minimum established curriculum requirements (measures progress, etc.).

Policy Notes:

- No software will be installed on any of the school's machines that is not an approved piece of software for performing work-related functions.
- No personally owned software will be installed on any of the school's machines unless it has been put through the complete approval process.

Appendix F
Working Document
Academic Technology Long Range Plans
Draft April 2004

Over the next three years the responsibilities of the school's three academic technology teachers should concentrate on these four areas:

- 1) ***Integrate technology across the school's curriculum:*** Responsibilities of the school's three computer teachers should shift from teaching students to training classroom teachers. This requires a change in the upper school's graduation requirement – replacing the 1 credit requirement through integration of major software applications, Internet functions and resources, and multimedia techniques through identified curricular offerings; for example, data analysis with spreadsheet applications in all biology courses. Programming, specifically JAVA in the upper school and Lego/Logo in the middle school should be continued to be offered through separate computer courses. An introductory course should also be offered in both the middle and upper schools to help transition new students to the Moses Brown community. Integration and therefore changes in the lower, middle and upper school curriculum requires support from the divisional curriculum committees and the school's dean council.
- 2) ***Offer teacher training and professional development:*** Computer teachers should focus their efforts on individual, small group (or departmental) or divisional workshops, seminars, and sessions for teaching new technologies, instructional software, and Internet resources to classroom teachers. Instruction should provide professional tasks (writing and producing comments, managing documents on the network, creating a classroom web site, etc) and instructional applications (multimedia presentations with PowerPoint, statistical analysis with Excel, etc). This shift in evidence requires non teaching personnel must assume responsibility for technical and maintenance support.
- 3) ***Signature Projects:*** The instructional program should continue to identify (the upper school Java programming course, the middle school Lego/Logo robotics project, etc), enhance, and highlight specific signature programs within the academic technology program. Coordinating efforts between technology integration and teacher training activities will advance signature activities (the upper school meteorology course, digital journalism, etc) across the curriculum. Sufficient funding for new hardware technologies, software tool applications, Internet resources, or professional development is crucial to the success of these new innovations.
- 4) ***Multimedia, wireless and handheld devices:*** Divisional teachers need access to and training on new technologies in particular 1) smart boards and projectors, 2) multimedia and digital video cameras and software, 3) wireless computer tablets, and 4) scientific hand held devices (graphing calculators, palm pilots, to data collection devices). First hand experience, training and practice with current technology will allow the school's k-12 academic technology teachers to offer guidance, instructional and support to classroom teachers.

Appendix G

ISTE Technology Support Index

The Technology Support Index (TSI) assessment is a tool for schools and districts to profile their technology support programs and to provide solutions based on those unique profiles. Two assumptions are built into the use of the TSI: First that all districts have in place or are planning network infrastructure to every classroom. The TSI does not address the need for infrastructure. Second, we assume that all four domains of support are required. There is a relationship between the four domains — spectacular work in one domain will impact the need for work in another (e.g., staffing vs. standards). It is assumed, however, that a minimum threshold is required in each domain.

The four domains of support described in the TSI are:

- Equipment Standards — Focuses upon consistent equipment and software decisions that can directly impact the quality of support provided.
- Staffing and Processes — Addresses technical assistance staffing and the support practices used that can impact efficiencies in support.
- Professional Development — Considers how strong professional development can change the nature of organizational support requirements and impact a team's ability to provide support.
- Intelligent Systems — Identifies strategies that capitalize upon the technology itself to provide strong support.

The TSI was developed so that four general stages describe the school or district's capability for each strategy, and also for each overall domain. The stages are broad generalizations, but can be used to better understand where a district may want to focus their improvement efforts.

The four stages of capability are:

- Emergent — A strategy or domain that has a need for attention and improvement; the emergent strategy or domain is in the beginning states on a developmental continuum, and if the issues aren't addressed on-going support challenges will likely be found.
- Islands — A strategy or domain that has isolated areas of excellence, but still needs attention and improvement. Some effective practices are in place, but they are not systemic in nature.
- Integrated — A support strategy or domain that is doing a very good job of support in many areas. Improvements are recommended, but they are limited in nature.
- Exemplary — An outstanding strategy or domain; few improvements are necessary as most areas are supported well. Improvements will refine the support strategy.

In addition to the four stages of capability, fiscal Implications are also included. For each strategy in the TSI general fiscal implications are identified with dollar signs (\$\$\$). Many strategies are fiscally neutral, while others will have significant fiscal impact (\$\$\$\$\$). Recommendations will be provided with the least costly recommendations listed first.

Please see attached sheets analysis overview and results.